TECHNOLOGY NEEDS/OPPORTUNITIES STATEMENT

SYSTEM TO RETRIEVE RH TRUW FROM CAISSONS

Identification No.: RL-MW016
Date: August 2000

Program: Waste Management
OPS Office/Site: Richland Operations Office/Hanford Site
PBS No.: RL-CP02
Waste Stream: 1566 – RH-TRU Stored/New, 3490 – M-91 Feed
TSD Title: 206 – M-91 Facility
Operable Unit (if applicable): N/A
Waste Management Unit (if applicable): N/A
Facility: Future M-91 Facility/Caissons.

Priority Rating:

This entry addresses the "Accelerated Cleanup: Paths to Closure (ACPC)" priority:

_X_ 1. Critical to the success of the ACPC.
____ 2. Provides substantial benefit to ACPC projects (e.g., moderate to high life-cycle cost savings or risk reduction, increased likelihood of compliance, increased assurance to avoid schedule delays).
____ 3. Provides opportunities for significant, but lower cost savings or risk reduction, and may reduce uncertainty in ACPC project success.

Need Title: System to Retrieve RH TRUW from Caissons

Need/Opportunity Category: *Technology Need* -- There is no existing or currently identified technology capable of solving the Site's problem (i.e., technology gap exists, no baseline approach has been identified).

Need Description: Alpha caissons are cylindrical, underground receptacles used to store RH-TRUW. This need description covers all Hanford Site Areas including the 600 Area. There are five alpha caissons in the Hanford Site 218-W-4B/200 West Area Burial Ground. The alpha caissons, located 14 ft below grade, are accessed by a 3-ft-diameter fill chute and a 1-ft-diameter ventilation shaft. A shipment, typically one to eight waste containers, would be transferred to the caissons by inverting the shipping cask and allowing the containers to fall randomly into the S-shaped fill chute. The majority of the waste was packaged in 1-gallon cans (approximately 97% of the caissons inventory), but some 5-gallon containers, 2-gallon containers, and miscellaneous hot cell equipment also were deposited in the caissons.

Based on engineering studies done to date, the preferred retrieval method is to extract the waste through the fill chute with a robotic arm. Because of the possibility of ruptured containers, loose fines, and other solid waste forms, the robotic arm must be adaptable enough to extract a wide range of shapes and sizes of solids. After bringing the waste into a portable, shielded enclosure located over the caisson, it must then be packaged and transferred to a shielded transfer cask. The waste would then be transferred to the future M-91 facility for treatment. Development of: 1) remote systems to retrieve the waste forms from the caissons, 2) screening systems to identify non-TRUW material for alternative processing, and 3) packaging systems are required.

Schedule Requirements:

Earliest Date Required: 2009

Latest Date Required: 2014

Technology needs to be established by the end of FY 2013 to support the planned retrieval of TRUW from the alpha caissons in FY 2013-2017.

Problem Description: No technology currently exists to retrieve, screen, and package RH-TRUW from the caissons for eventual treatment at the M-91 Facility.

Potential Life-Cycle Cost Savings of Need (in $000s) and Cost Savings Explanation:
No measurable cost savings are expected. This need is to establish method to treat a waste stream where no method currently exists

Benefit to the Project Baseline of Filling Need:
Establish method to retrieve waste.

Relevant PBS Milestone: A2G-08-109 M-91-15 Complete Acquisition of Facilities and Initiate Treatment of RH and Large Container (CH) LLMW

Functional Performance Requirements: Retrieval equipment must meet access limitations of caissons and be capable of remotely removing, screening and packaging various caisson RH-TRU waste forms.

Work Breakdown Structure (WBS) No.:	***TIP No.:***
1.2.2	N/A

Justification For Need:

Technical: No technology currently exists to retrieve, screen, and package RH-TRUW from the caissons for eventual treatment at the M-91 Facility.

Regulatory: TRUW material to be disposed of at WIPP.

Environmental Safety & Health: There are occupational health concerns associated with retrieving, screening, and packaging RH-TRUW.

Cultural/Stakeholder Concerns: The RH-TRUW in caissons must be retrieved for treatment and proper disposal.

Other: N/A.

Current Baseline Technology: None.

End-User: Waste Management.

Contractor Facility/Project Manager: TBD.

Site Technical Point-of-Contact: Dale Black, Fluor Hanford, Inc. (FH), (509) 376-8458, Fax (509) 372-1441, Dale_G_Black@rl.gov.

DOE End-User/Representative Point-of-Contact: Kevin Leary, DOE-RL, (509) 373-7285, Fax (509) 372-1926, Kevin_D_Leary@rl.gov.

Waste volume, m^3	25 m^3
Waste form	RH-TRUW solids
Waste stream I.D.	1566
Contaminants and co-contaminants	Alpha, beta and gamma radiation
Function of technology	Retrieve, screen and package caisson RH-TRUW
Source category	Various Hanford Site programs